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TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLES:—The Artistic Aspect of Trees. VII.—A New Edition of Gray's Manual.—Danger from Brush-fires 217
Some Old American Country-Seats. II.—The Lyman Place (with plan and illustrations). . . . . *Charles Eliot.* 218
Native Shrubs of California . . . . . *Professor E. L. Greene.* 219

FOREIGN CORRESPONDENCE:—London Letter . . . . . *W. Watson.* 220
The Purple Beech (with illustration) 221

CULTURAL DEPARTMENT:—Brussels Sprouts and Savoys . . . . . *W. F. Massey.* 222
How We Rid Our Vines of Mealy Bugs . . . . . *W. H. Divers.* 222
Orchid Notes . . . . . *H. A. Bunyard, W. Watson, A. Dimmock.* 222
The Common Primrose . . . . . *F. L. Temple.* 223
Tuberoses . . . . . *James Currie.* 223
Perpetual Carnations . . . . . *John Thorpe.* 224

Notes from a Northern Spring-Garden . . . . . *C.* 224

Principles of Physiological Botany. XIX . . . . . *Professor George Lincoln Goodale.* 225

PERIODICAL LITERATURE 225

CORRESPONDENCE:—How a City Gained a Park . . . . . *Elisabeth Bullard.* 226
Flowering of Hepatica triloba . . . . . *D. D. Slade.* 226
An Orchid Nursery . . . . . *S.* 227

RECENT PLANT PORTRAITS 227

NOTES 228

ILLUSTRATIONS:—Sketch-plan of the Lyman Place 219
The Purple Beech of the Lyman Place 221
The Lyman Place, Waltham, Massachusetts 223

The Artistic Aspect of Trees.—VII.

WE spoke not long ago of the Lombardy Poplar and the Weeping Willow as trees which, on account of their peculiar form, are exceptionally conspicuous, and therefore must be placed with care if a good general effect is to be heightened by their presence. The Purple Beech is a tree of normal shape and texture, but its eccentric color puts it in the same category with trees of eccentric shape. Rightly used, it may be a feature of extreme beauty; wrongly used, it may deform an otherwise beautiful landscape. It should never look as though mere chance had determined its position, for everyone knows that it is not a natural species but a mere variety, originally produced, indeed, by one of Nature's spontaneous accidents, but carefully perpetuated by the hand of man. It should never be planted in a wood, on a rough hill-side, in a picturesque glen, or in any other place in which it is desired to simulate a purely natural effect. Its place is in ornamental grounds near a house or in the more carefully tended portions of a public park or pleasure-garden. Here it may stand in isolation or be grouped with other trees of an appropriate character. Nothing, of course, groups so well with it as Beeches of the normal hue—either the European Beech, with its beautiful dark green, glossy foliage or the American Beech, with its lighter foliage, paler bark and more graceful ramifications. Failing these, its associates should be trees which will repeat its own lines in a general way, like the Horse-chestnut or the Scarlet Maple, or which will gently contrast with those lines, like the Sugar Maple with its more elliptically-shaped head. To group it with the broken, picturesque outline of a White Pine, or the hard, conical shape of a Spruce, would be to ruin its effect. And, as a general rule, it looks better standing apart from all other trees, for a well-grown specimen is as beautifully symmetrical in form as it is peculiar in color. If, however, it is grouped with other trees as much attention should be paid to the shades of green as to the forms of its neighbors. In shape the Negundo, for example, would be a good tree to group with the Purple Beech; but the light green of its leaves contrasts unpleasantly with the vivid tint that this Beech sometimes assumes. It may be added that it varies much in tint, as may be read in the fact that it is sometimes called the Purple and sometimes the Copper Beech. Those shades which approach most nearly to brown are the most desirable as being less eccentric and conspcuous than the brighter purples; but in our climate, fortunately, the hot sun of summer often turns a tree that has been too vivid in the spring months to a beautifully modulated coppery color. The Purple Beech has sometimes been recommended as a street-tree, and has more than once been planted as an avenue-tree in American country-places. But it is not well adapted for either of these purposes. What we want in the city is as much of Nature's verdure as can be obtained; and to line a street with purple trees is to defeat this object. Not eccentric but normal color is the thing to be secured in systematic street-planting, although, of course, in a small park or the grounds of a villa a well-placed Purple Beech is an interesting object, and if the arrangement of such a spot is formal or semi-architectural, its presence is doubly appropriate. In a country avenue the Purple Beech is likewise out of place. Here we have, indeed, an abundance of green tones in the surrounding landscape, but a whole avenue of a purple color cannot but disturb the restfulness and harmony of even the widest and most varied park. Anything that is eccentric, whether in color or in form, should be sparingly used—should merely accent and enliven a scene, not be so often repeated as to dominate or confuse the general effect. A vast bed of purple Coleus could not agreeably take the place of a lawn, nor can a long double row of purple trees agreeably form an avenue.

The common White Birch of Europe, like the Paper or Canoe Birch, which is less frequently planted, is a peculiar tree in both form and color. The color of its leaves, indeed, is green, but the brilliant whitish hue of its bark which, as its foliage is not dense, appears even in the head, added to its slender outline and drooping habit, makes it extremely conspicuous. No tree is more generally seen in our parks and country-places, and none, perhaps, has been such a source of sorrow to the landscape-gardener. Early associations have made our little Gray Birch dear to all lovers of Nature in our Eastern and Middle States, where it grows abundantly in the woods and copses, and, combined with the White Pine, often gives the landscape a distinctive look. The fact that it is peculiar, and is graceful and pretty rather than beautiful in a more serious sense, has tended to make the similar and more easily-procured European Birch very popular. It is easily grown and flourishes in a variety of situations. No tree, therefore, has been more frequently introduced into private grounds by proprietors who think they can improve upon an artist's first arrangement. But, charming though the Gray Birch is when growing wild, and when judiciously planted, a single Birch of this character unwisely placed can work the greatest injury to a landscape. Its weakly pliant form and shining trunk make the smallest specimen conspicuous against a background of other trees, and may disturb the majestic repose and dignity of a dozen great Oaks or Beeches. Nor, as most generally placed by the amateur—especially when the cut-leaved garden variety is chosen—in isolation on a lawn, can it often have a good effect. It is too delicate, fragile, nerveless a tree to look well by itself, and its outline, although graceful, is seldom really beautiful. This, unlike the Purple Beech, is a tree for the edge of a natural-looking wood, for a rocky glen, or a tangled hill-side. A familiar wild tree in many countries, it looks out of place if posed as a garden specimen by itself, while its form shows to the best advantage when several individuals grow near together in association with such trees as Nature herself commonly groups about it. With Pines, Hemlocks, Tupelos and Scrub Oaks in the woods along the Massachusetts coast, the Gray Birch composes most beautiful pictures; and it is pictures such as these that the

landscape-gardener should study when striving to make the best use of the material at his disposal.

A new edition of the "Manual of the Botany of the Northern United States" is in press, and will appear early in the autumn. It has been prepared by Mr. Sereno Watson, with the assistance of Professor John M. Coulter. The Willows have been elaborated by Mr. M. S. Bebb; the Carices by Professor Bailey, and the Ferns by Professor Eaton—the best authorities in the United States upon these difficult plants. The field covered by the new edition is enlarged to embrace the territory as far west as the one-hundredth meridian, older editions having covered the Northern States east of the Mississippi River only; and the *Hepaticæ* from the pen of Professor Underwood are to be added. "Gray's Manual" is one of the best books of its class that was ever written, and for forty years it has been the constant guide and companion of every man and woman who have successfully studied the flora of eastern North America. No popular flora was ever cast in a better mould, or has had a more widespread and lasting influence. Twenty years have passed, however, since the last edition appeared, and a new one to include all the additions which have been made in recent years to our flora, and all the changes in nomenclature and grouping made necessary by recent investigations has long been greatly needed. Professor Gray, up to the very end, expected to publish a new edition of the Manual, but the time never came when he could turn his hand to it without neglecting more important duties, and the task has fallen upon his associate and successor.

The following is the substance of a dispatch dated April 21st, from Holyoke, Massachusetts, and published in the Boston *Herald* on the following morning: A fire which destroyed a large amount of valuable woodland property started from some embers emptied among the brush on the outskirts of this city at four o'clock this afternoon. The wind was blowing a furious gale, and fanned the embers into flames, which were communicated to the woods near by. The wind carried the fire from tree to tree. Farmers turned out to fight the flames, but for hours their efforts were unavailing. Thousands of acres of valuable timber were burned before the fire was got under control. It had laid waste a territory four miles long and 100 to 400 yards wide.

A dispatch in the same issue of the *Herald* from Pittsfield, Massachusetts, states that "two forest-fires are now raging, one in the west part of the town, north of the Valentine summer place, which is doing considerable damage and threatening several dwellings. Another great forest-fire is burning furiously in the north part of the town. This covers a very large area of territory, and is sweeping on toward the east with great fury, taking the timber in its course and threatening a whole settlement with destruction." A dispatch from North Adams of the same date, states that "extensive forest-fires have been raging in this vicinity for the past few days, destroying large quantities of valuable timber, also thousands of cords of wood which had been cut and piled during the winter."

Announcements similar to these appear almost daily at this season of the year in the press of the country. They emphasize what we have so often insisted upon—that it is in the early spring, before the appearance of the new leaves, that there is the greatest danger from forest-fires, and that it is useless to expect that such fires will diminish in number and in violence until the time and the method of setting brush-fires upon farms are regulated by law, and some responsible officer is appointed in each town to decide when such fires can be set with safety to the community. It seems preposterous that any man should be allowed to set a fire on his land without restriction and without regard to the lives and property of his neighbors.

Many lives and many millions of property are sacrificed every year in the United States in this way, but the men who set the fires and allow them to escape to the land of other people are not responsible or cannot be made responsible for the damage they cause. The number of such fires can, however, be greatly restricted, and the Forestry Associations, Forestry Commissioners and similar bodies who are looking about for some object upon which to centre their efforts will find here a good cause. Prevention is the only cure for forest-fires, and the most efficient way to prevent them will be found in limiting the right of individuals to set brush-fires. A brush-fire in a wooded district on a dry spring day, with a high wind blowing, is a much more dangerous thing to the community than a nitro-glycerine factory. Yet no farmer would ever claim the right to manufacture nitro-glycerine on his premises, or consider that his liberties were invaded if the community in which he lived objected to his making it. It is through the establishment of some supervision over the setting of brush-fires more than by any other one thing that the interests of forestry can be advanced and the protection of rural property increased in the Eastern and Northern States.

Some Old American Country-Seats.

II.—The Lyman Place in Waltham.

BEYOND Cambridge and Somerville and about seven miles from Boston Common rises a range of irregular and sometimes rocky hills, from whose summits one may see on the west Wachusett and on the east the ocean. At the southern end of this highland two considerable brooks issue from the hills and, joining their waters, flow as one stream across about a mile of smoother country to Charles River. Between the western brook and the foot of the rocks is a warm slope having a southern exposure, and here one of the colonists of 1634, by name John Livermore, built his house and cleared the land for a farm. Other Livermores—namely, Nathaniel, Samuel and Elijah—in turn succeeded to the property; of whom Samuel came to most honor, for he married four times, and served his fellow-townsmen as their clerk, assessor and captain of the company, and also as deacon of the church, which was built about 1722 "within twenty rods of Nathaniel Livermore's dwelling." Elijah Livermore became the founder of a town in Maine, and sold the farm to Mr. Jonas Dix, of the class of 1769 at Harvard College, who brought his bride to the Livermore homestead, and there lived the quiet life of a schoolmaster and selectman until his death in 1796.

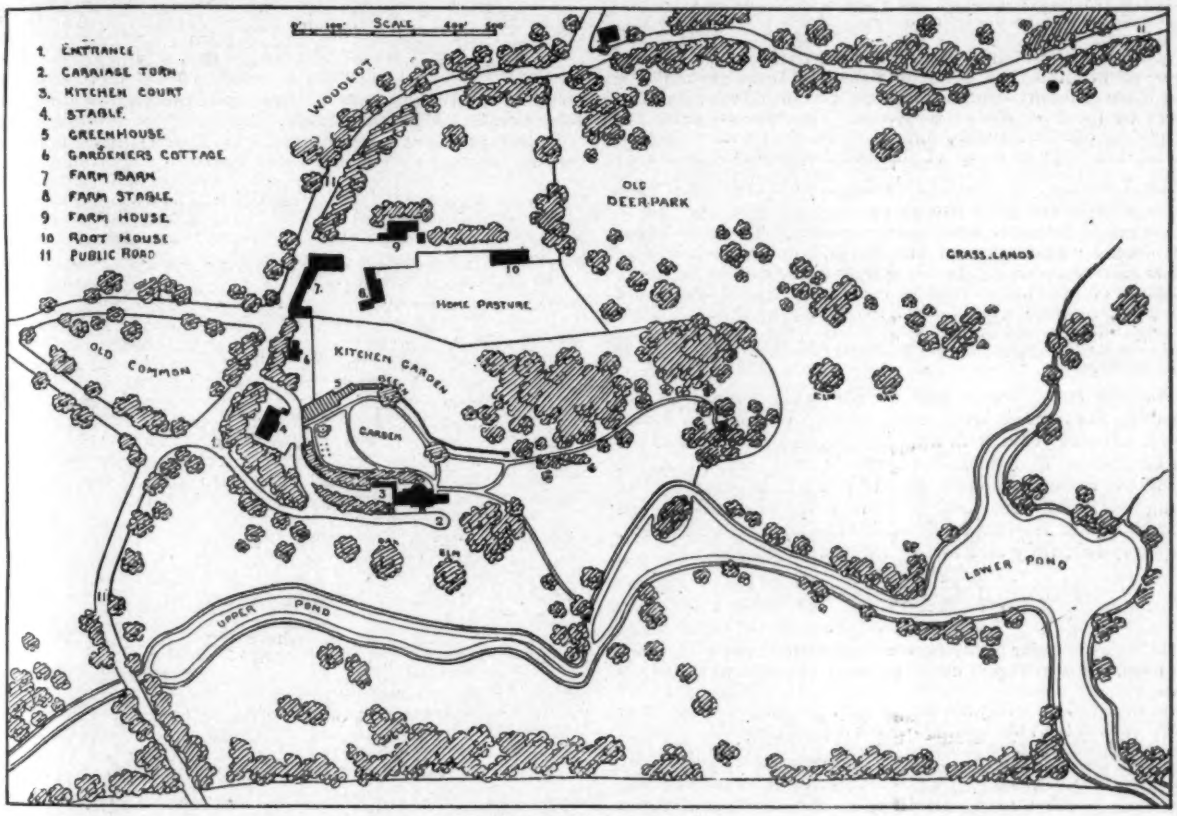
It would be very interesting to know what was the condition of the neighborhood at this time, whether the sheltering hills behind the farm were wooded or no, and what sort of a channel the Chester brook ran in. The place must have been decidedly attractive in some way, for its next owner, Theodore Lyman, a merchant of Boston, bought it with the express intention of making it a country-seat, and forthwith built a mansion which was valued by the assessors of 1798 at the vast sum of eight thousand dollars! This substantial house he placed not upon the highland, where the popular taste of to-day would set it, but upon the flat, and from one to two hundred feet south of the southernmost rocks. Here it was sufficiently high above the brook, which flowed in front about 400 feet away, while behind it space was obtained for a well-sheltered garden. The east wing was built close to a little knoll, which, with the trees upon it, helped to make the house appear firmly and comfortably planted. The west wing also had its supporting trees. The smooth lawn before the house was made with material dug from beside the brook, which was then induced, by the help of a low dam, to flow more quietly and broadly. Plainly, English books on landscape-gardening, like Repton's or Whately's, had made part of this American gentleman's reading—the low setting of the house and the serpentine curves given to the grass-edged shore of the stream furnish proof of this.

At first, the approach road entered the estate from the south-east and crossed the brook on a stone bridge of three arches, but in after years a new entrance was made in the position shown upon our plan, and then the older way was discontinued, with the unfortunate effect of bringing the driveway to a sudden ending at the house-door. No other important alterations of the original plan have been attempted since the designer himself made this change. To be sure, the second Lyman, probably in haste to provide shade in certain parts, planted many Norway Spruces, but these his son is now

gradually removing, to the great improvement of the general scene; for the deciduous forest trees which these quick-growing conifers hid from sight have now attained a handsome stature and, leaning forward or hanging from the steep banks behind the house and from the knolls, compose a harmonious and striking scene, which the cone-shaped Spruces at present confuse and obscure. A few of the native trees are uncommonly large; for instance, an Oak and an Elm, which stand alone in the grass-field east of the pleasure-ground; and, just before the house, a fine swamp White Oak, which was, doubtless, an aboriginal inhabitant of the Chester Brook Valley—its horizontal branches spread 100 feet. Here, too, is an English Elm of uncommonly wide-spread habit, its many large limbs supported by a trunk which measures fifteen and a quarter feet in circumference.

scenery of the estate—the gentle slopes of grass-land, in the hollow of which lie the ponds, the wide stretches of moist meadow, the occasional passages along the stream where Elms or Willows overhang the water, the sheltering banks and knolls clothed with dense woods or dotted, as in the remote parts, with dark Junipers and outcrops of rock. The landscape is more appropriate to human use and occupation, and at the same time it is more beautiful than was the original natural scene. The meadows are more meadow-like than they were, the stream reflects more sky, the trees are nobler trees, and they stand in ordered masses, not in uniformly dense array. Here is abundant proof that if Nature is helped and not forced she will make for us scenery which shall grow to more and more loveliness and character as the years pass.

Boston. *Charles Eliot.*



Sketch Plan of the Lyman Place.

But the most remarkable tree upon the place—a Purple Beech (see page 221)—stands in the garden behind the house. This little level space is curiously irregular in ground-plan. It is bounded on the north by a short range of glass-houses and by a high brick wall, which curves in and out in order to avoid the ledges of the rocky bank behind it. This old wall is trained all over with Peach and Pear trees, an ancient hedge of Box accompanies it at some six feet from its base, and many forest trees rise behind it. The garden-ground is all one slightly varied level of soft grass, with a few trees of chosen kinds near the edges, a few Rhododendrons and Roses, and one giant White Pine, which seems to guard the open end of the ground where the simple but picturesque enclosure expands into the still simpler ground outside. With its soft shadows at all hours of the day, its sheltered quietness, its intricacy in one part and its open network in another part, this is a charming spot—a scene which would be lovely enough without its crowning glory, the guarded Purple Beech. The tree stands close against the brick wall; the circumference of its embossed and tortuous trunk is more than thirteen feet, and its branches extend eighty-five feet. This is a large Beech to be only ninety years old, and it is just possible that Mr. Dix may have planted it and the great Elm before the house; but their stature is more probably to be accounted for by the good soil and shelter.

Many photographs, and we have room for but one, could only partially illustrate the beauty and variety of the larger

Native Shrubs of California.—I.

Nuttallia cerasiformis, belonging to the alliance of the Cherries and Plums, botanically something between the two, with strong points of divergence from both, is perhaps our earliest shrub to put forth leaves and flowers. Before the end of January, if the winter be mild, he who rambles by brooklets among the hills may catch a breath of fresh, delightful fragrance, and so be notified that Nuttallia is already coming into bloom. Its nodding clusters of green and white, partly concealed by half-grown leaves, make little show, and the shrub is commonly of humble growth, although occasionally appearing in the dimensions of a Hazel-bush. It must, nevertheless, be a favorite wherever it is known, on account of the sweet odor of its flowers—not heavy and surfeiting like that of the wild Plums and Cherries, but most agreeable and refreshing, something to be compared to the flavor of Almonds. No other flowers have such a smell; and I well remember how, in my earlier walks in California, botanizing one April day in the northern Sierra, at the base of Mount Shasta, where half the thickets were white and red with the bloom of Dogwood and Redbud, and the rocky margins of the noisy mountain-streams were set full of the broad leaves and pink corymbs of the great Saxifrage (*S. peltata*), all so attractive to the eye, I wondered and wondered which of the many new beauties it was that gave forth such unwonted and peculiar fragrance, until at length I

broke off a twig of the little Cherry-like bush, which was then new to me, and found that, in its modest reserve, to be the source of all the sweetness with which the air was laden.

In the Foreign Correspondence of Garden and Forest I have lately read with some interest the remark that while in France the handsome fruits of Nuttallia are its chief attraction, in England it bears no fruit. May not this possibly be explained by reference to the dicœcious character of the shrub? Have they in England, perchance, only the staminate flowers? Much the same thing may be noted in some parts of California. About Berkeley, for example, I have never found the fruits, nor even any bushes with pistillate flowers; but on the opposite side of San Francisco Bay, in Marin and San Francisco Counties, there are plenty of pistillate-flowered specimens, and the fruits are produced in abundance. There is much more dicœcism in California plants and shrubs of the Rosaceous and Pomaceous families than the authors of our books of botany have known.

Owing to inattention to this matter our common wild Blackberry, or Bramble, has been published by botanists under at least three different names, as if there were three species. The oldest of these is *Rubus vitifolius*. The type so named is merely the pistillate shrub, and its flowers are commonly but one-third as large as those of the staminate plants, and their petals are rounded. These, growing as they do among the staminate shrubs, the flowers of which latter are not only thrice as large, but have narrow and elongated petals, look as if they might indeed be of a distinct species. The fine figure in Hooker's "Flora Boreali-Americana," under the name of *Rubus macropetalus*, represents simply the staminate or sterile condition of what has commonly been called *Rubus ursinus*, of which the prior name, and the one to be retained, is *R. vitifolius*.

I ought here to add that in Nuttallia, also, the staminate plant produces rather larger flowers than the pistillate.

Oakland, Cal. *Edward L. Greene.*

[*Nuttallia cerasiformis* was on the 22d of April in full bloom in the Arnold Arboretum, where it has been growing for several years with a slight protection in winter. It is a handsome and desirable shrub in cultivation, and the first in the Arboretum collection to put out its leaves. The strong perfume described by our correspondent is not noticed in the flowers of the cultivated plant, which are, however, delicately and faintly fragrant.—Ed.]

Foreign Correspondence.

London Letter.

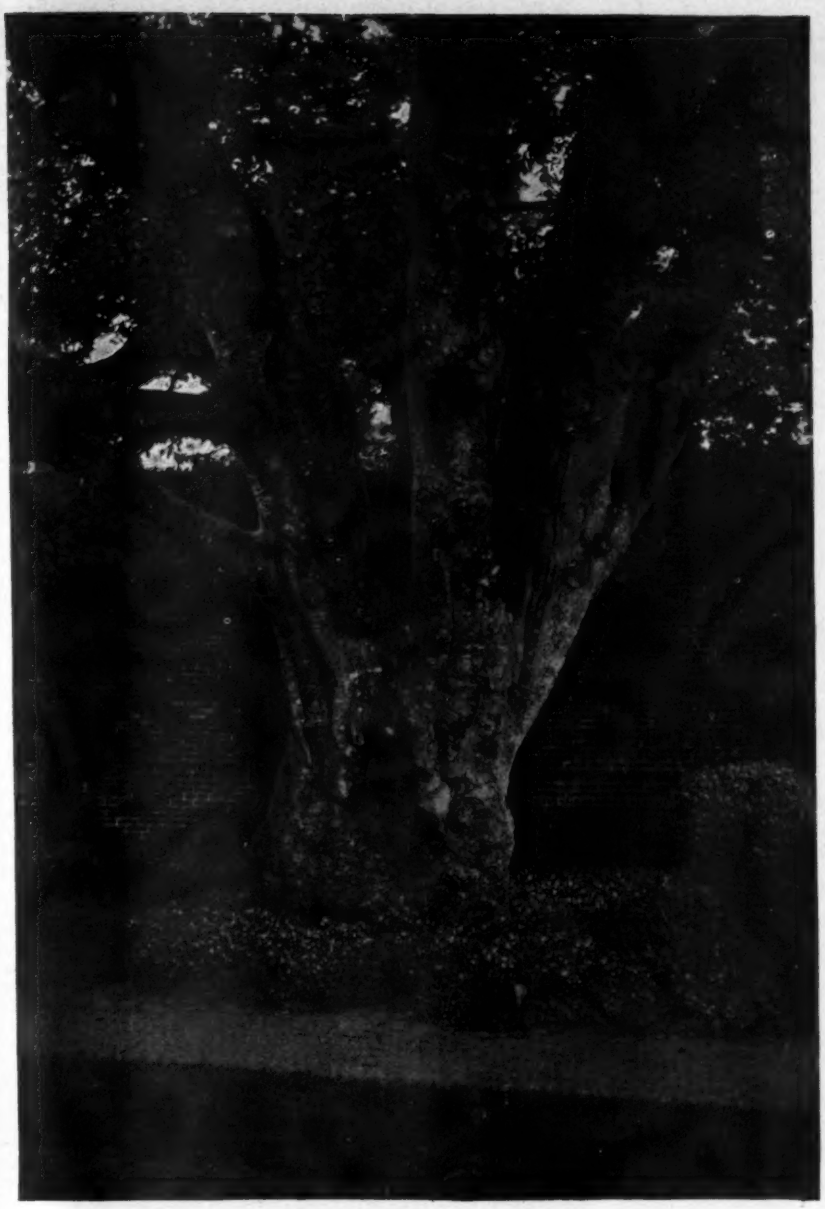
THE most popular hardy flower in England now is the Daffodil. It is grown in every garden; thousands of bushels of its flowers are distributed daily by the costermonger and flower-dealer, and everyone admires it. And yet we are told by Mr. J. G. Baker, the botanist who has paid greatest attention to Narcissi, that twelve years ago these plants were unknown except by a few specialists and as wild flowers in the woods and fields. Mr. Burbidge, whose writings on the Daffodils have done so much to call attention to them as beautiful garden-plants, added yet another contribution to the literature of the Narcissi in the form of a paper which he read at the last meeting of the Royal Horticultural Society. He told us that the Daffodil was cultivated and valued for its medicinal properties a thousand years before Christ. Dean Herbert, the champion of the whole order *Amaryllidaceæ*, grew and crossed many species and varieties of Narcissi sixty years ago; in fact, he was the first breeder of these plants. After him came Leeds and Backhouse, both noted breeders of Daffodils, and the raisers of some of the best of those grown in gardens now. All the forms cultivated are varieties of or crosses from the following six species, the only true species recognized by botanists—namely, *N. poeticus*, *N. Pseudo-Narcissus*, *N. triandrus*, *N. Tazetta*, *N. Bulbocodium* and *N. Jonquilla*. Mr. Burbidge believes that any careful breeder could obtain from these six species all the many kinds of Daffodil now known in gardens. The life-cycle of a Narcissus is from two to five years. The seeds should be sown in boxes as soon as ripe, and they germinate in the November or December following. The one-year-old bulbs are the size of Wheat-grains, two-year-olds that of Marrow peas, three-year-olds either flower, or if of the large-bulbed kinds, are the size of Hazel-nuts. Others flower in the fourth year, others in the fifth, but they are not at their best till a year or two after this. Mr. Burbidge is of opinion that crude manure of any kind whatsoever is harmful to Daffodils, and recommends the use of burnt-earth, wood-ashes and road-scrapings instead of the strong manures generally used for these plants. Indeed, Mr. Burbidge went so far as to condemn the use of manure for all kinds of bulbous plants, but on what grounds he did not state. Certainly good manure, such as cow-dung or horse-droppings, has always proved a safe and vigor-giving help to many bulbs under cultivation. I have in my mind just now several large specimens of Eucharis, which have been under my eye ten years, and these have always been watered with liquid cow-manure when the flower-scapes begun to develop, which occurs usually about three times a year. These plants are perfectly healthy, and they bloom well. Of course there are many other cases, equally convincing of the fitness of good manure for bulb-culture. What would the Dutch growers of bulbs do without manure in their poor, sandy soil?

Mr. Englehart, who is well known as an amateur grower of the Daffodil, also read a paper on the breeding of these plants. He recommended certain crosses with a view to finally obtaining larger flowers of greater substance and earlier to expand than those we now have. He did not think that the scarlet Daffodil would ever be obtained, notwithstanding Mr. Burbidge's belief that by careful breeding it would come. We do not want a scarlet Daffodil no more than we want a blue Rose or a blue Chrysanthemum.

There was a grand display of all kinds of Daffodils to illustrate Mr. Burbidge's paper. There was also a charming exhibition of rare and beautiful Orchids. One of our oldest and most esteemed horticulturists said to me, as we stood in front of the superb collection sent by Baron Schrœder, "Can one wonder at what foolish people call the 'Orchid mania' when looking at plants like these? Orchids are Nature's richest gifts to the garden. They have no equals in form, in color, in fragrance and in variety." I disputed the claim of superiority in fragrance, for no Orchid surpasses, and only very few approach, the Violet and the Rose in sweetness. I am afraid, too, that a collection such as was shown by Baron Schrœder is quite beyond the reach of all save a very few. They were of the choicest and rarest, and they were perfect examples of good culture. The Dendrobiums comprised large specimens full of flower of the following: *D. nobile*, *D. nobile Cooksoni*, *D. nobile nobilius*, *D. nobile album*, *D. micans*, *D. splendidissimum*, *D. Ainsworthii*, *D. Luchianum*, *D. euosmum*, *D. aggregatum* and *D. Brymerianum*. It would be impossible for me to convey any idea in words of the beauty of these plants. And this is true of *Cattleya Lawrenceana*, a richly-colored variety, with twenty-one expanded flowers; *C. speciosissima Schrœderiana*, a large-flowered variety, with pure white sepals and petals, and the broad lip rich crimson, with white veins and a tinge of yellow in the throat. Mr. Sander sent beautiful plants of the white variety of *Trichopilia suavis*, *Oncidium bifolium*, a graceful little Orchid, with arching spikes of bright yellow flowers not unlike those of *O. varicosum*; *Dendrobium marmoratum*, a mauve-tinted form of the old and beautiful *D. transparens*. A fine example of *Maxillaria Sanderiana*, whose large flowers are colored like the white Tigridia (*T. Pavonia alba*), was exhibited by Mr. Tautz, who also sent a plant in flower of a very dark-colored variety of *Miltonia vexillaria*, the flowers being a deep purplish-rose, with a white eye.

From Low & Co., of Clapton, came a spike of *Phalænopsis Schilleriana*, var. *alba*, in which the flowers are large and pure snow-white, save a few yellow dots on the lateral lobes of the labellum. Kew sent a collection of Indian Arisæmas in flower; *Godwinia gigas*, with an enormous, boat-shaped spathe, two feet long; *Epidendrum bicornutum*, with eight spikes of flowers; a collection of species of Primula; *Columnea Kalbreyeri*, with large, sickle-shaped leaves, olive-green above, purple beneath, and numerous large, tubular yellow flowers; *Rudgea macrophylla*, a large-leaved stove-plant with a large, round head of white fleshy flowers.

Forsythia suspensa (*Fortunei*) is the most beautiful hardy shrub in flower here now. It has very few equals among hardy, spring-flowering shrubs, its long, wand-like branches being thickly set with hanging, bright yellow, bell-like flowers. It is an excellent plant for training against a house-side, a specimen in such a position at Kew being now a large sheet of bright yellow which catches the eye a mile away. In the shrubberies it is equally at home. It may also be grown for early forcing for the conservatory. *F. viridissima*, the only other species, is a greatly inferior plant, but, unfortunately, it is sometimes sold by nurserymen as *F. Fortunei*. There are two forms of *F. suspensa*; one in which the flowers have the corolla-lobes twisted and the pistil twice as long as the stamens; the other in which the lobes are shorter, not twisted, and the pistil is hidden beneath the stamens. I read lately, in a book on Japan, that next to the "Mumè" (*Prunus Mume*), which is the most universal favorite spring-flowering tree in Japan, is this Forsythia, called "Rengyo" by the Japanese, and



The Purple Beech of the Lyman Place.

cultivated by them in every available corner. It was introduced from Japan to Europe, but is really Chinese, as also is the Mumè and many other plants of supposed Japanese origin, but which were obtained originally by the Japanese from China.

The funeral of the late Duchess of Cambridge, which has taken place at Kew to-day, has been exceptional for the magnificence and variety of the floral wreaths and crosses sent. There must have been close upon two hundred of these, some of them of gigantic size, and mostly composed of the choicest white flowers. Of those which appeared to attract greatest attention were the following: A wreath five feet in diameter, and eighteen inches across the coil, was made up of rich masses of *Odontoglossum crispum*, Stephanotis, Gardenia, Eucharis, etc. This wreath alone contained ten guineas' worth of flowers. A heart three feet across, and made up of Calla Lilies, Eucharis, Lilac and Gardenia, with a miniature cross of Mignonette fixed in the centre and upon this a tiny wreath of Forget-me-nots. A small cross of Violets with single flowers of Stephanotis dotted all over it. A circle of *Beaumontia grandiflora*, the flowers of which remained fresh when most other flowers were more or less drooping. An anchor, with cross composed entirely of rich yellow Tea-roses on a ground of Violets and Ivy leaves. A broad circle of pure white Lilac, with a knot composed of Gardenia. A large harp made up of rich white flowers, the strings formed of single lines of Violets. There were also many of the German style of wreath, in which the leaves of Cycas and similar plants form the principal feature. I never saw so wonderful a collection of beautiful flowers as were arranged in the chapel where the remains of the Duchess rested. Taking a rough estimate of their commercial value, I should say there were about $3,500 worth of flowers there. It has been stated lately in so-called fashionable papers that flowers at funerals were not the fashion. There were evidences at this funeral that flowers are more used than ever. *W. Watson.*

April 18.

The Purple Beech.

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broke off a twig of the little Cherry-like bush, which was then new to me, and found that, in its modest reserve, to be the source of all the sweetness with which the air was laden.

In the Foreign Correspondence of GARDEN AND FOREST I have lately read with some interest the remark that while in France the handsome fruits of Nuttallia are its chief attraction, in England it bears no fruit. May not this possibly be explained by reference to the diœcious character of the shrub? Have they in England, perchance, only the staminate flowers? Much the same thing may be noted in some parts of California. About Berkeley, for example, I have never found the fruits, nor even any bushes with pistillate flowers; but on the opposite side of San Francisco Bay, in Marin and San Francisco Counties, there are plenty of pistillate-flowered specimens, and the fruits are produced in abundance. There is much more diœcism in California plants and shrubs of the Rosaceous and Pomaceous families than the authors of our books of botany have known.

Owing to inattention to this matter our common wild Blackberry, or Bramble, has been published by botanists under at least three different names, as if there were three species. The oldest of these is *Rubus vitifolius*. The type so named is merely the pistillate shrub, and its flowers are commonly but one-third as large as those of the staminate plants, and their petals are rounded. These, growing as they do among the staminate shrubs, the flowers of which latter are not only thrice as large, but have narrow and elongated petals, look as if they might indeed be of a distinct species. The fine figure in Hooker's "Flora Boreali-Americana," under the name of *Rubus macropetalus*, represents simply the staminate or sterile condition of what has commonly been called *Rubus ursinus*, of which the prior name, and the one to be retained, is *R. vitifolius*.

I ought here to add that in Nuttallia, also, the staminate plant produces rather larger flowers than the pistillate.

Oakland, Cal. *Edward L. Greene.*

[*Nuttallia cerasiformis* was on the 22d of April in full bloom in the Arnold Arboretum, where it has been growing for several years with a slight protection in winter. It is a handsome and desirable shrub in cultivation, and the first in the Arboretum collection to put out its leaves. The strong perfume described by our correspondent is not noticed in the flowers of the cultivated plant, which are, however, delicately and faintly fragrant.—ED.]

Foreign Correspondence.

London Letter.

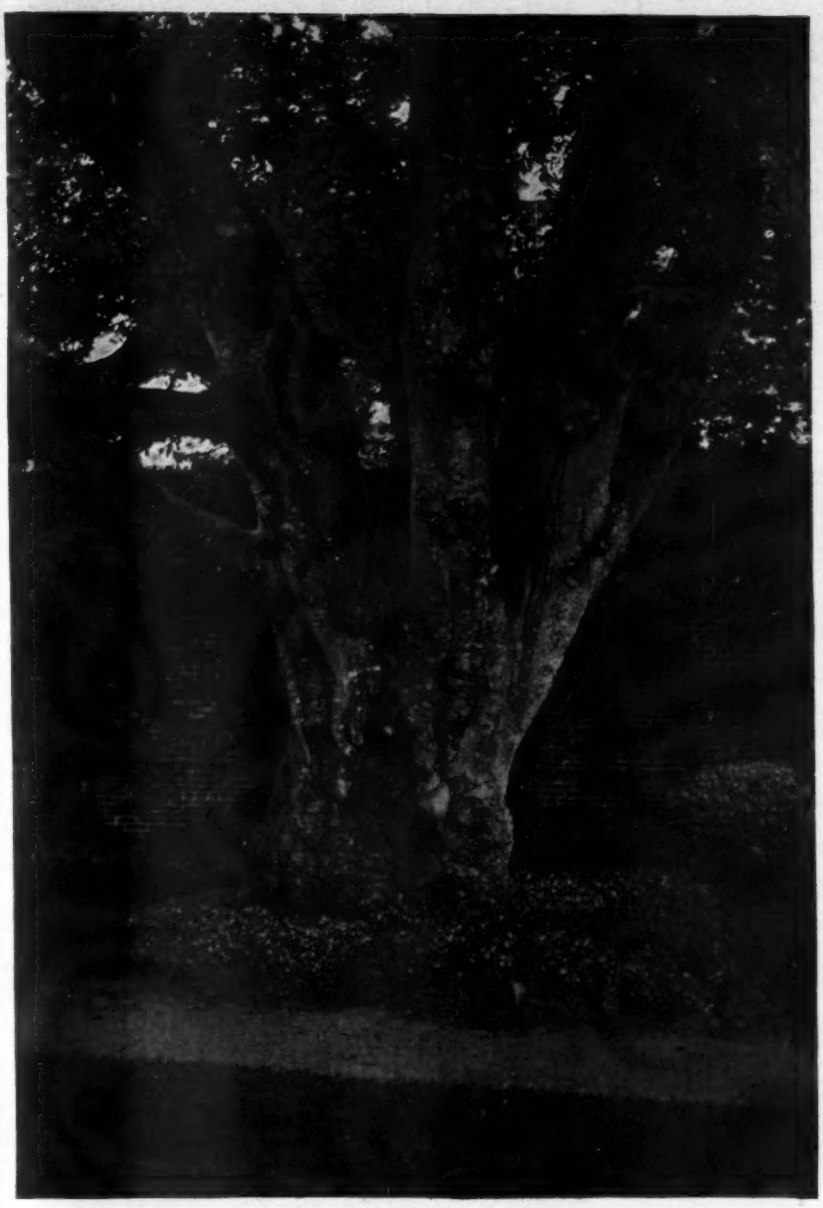
THE most popular hardy flower in England now is the Daffodil. It is grown in every garden; thousands of bushels of its flowers are distributed daily by the costermonger and flower-dealer, and everyone admires it. And yet we are told by Mr. J. G. Baker, the botanist who has paid greatest attention to Narcissi, that twelve years ago these plants were unknown except by a few specialists and as wild flowers in the woods and fields. Mr. Burbidge, whose writings on the Daffodils have done so much to call attention to them as beautiful garden-plants, added yet another contribution to the literature of the Narcissi in the form of a paper which he read at the last meeting of the Royal Horticultural Society. He told us that the Daffodil was cultivated and valued for its medicinal properties a thousand years before Christ. Dean Herbert, the champion of the whole order *Amaryllidaceæ*, grew and crossed many species and varieties of Narcissi sixty years ago; in fact, he was the first breeder of these plants. After him came Leeds and Backhouse, both noted breeders of Daffodils, and the raisers of some of the best of those grown in gardens now. All the forms cultivated are varieties of or crosses from the following six species, the only true species recognized by botanists—namely, *N. poeticus*, *N. Pseudo-Narcissus*, *N. triandrus*, *N. Tazetta*, *N. Bulbocodium* and *N. Jonquilla*. Mr. Burbidge believes that any careful breeder could obtain from these six species all the many kinds of Daffodil now known in gardens. The life-cycle of a Narcissus is from two to five years. The seeds should be sown in boxes as soon as ripe, and they germinate in the November or December following. The one-year-old bulbs are the size of Wheat-grains, two-year-olds that of Marrow peas, three-year-olds either flower, or if of the large-bulbed kinds, are the size of Hazel-nuts. Others flower in the fourth year, others in the fifth, but they are not at their best till a year or two after this. Mr. Burbidge is of opinion that crude manure of any kind whatsoever is harmful to Daffodils, and recommends the use of burnt-earth, wood-ashes and road-scrapings instead of the strong manures generally used for these plants. Indeed, Mr. Burbidge went so far as to condemn the use of manure for all kinds of bulbous plants, but on what grounds he did not state. Certainly good manure, such as cow-dung or horse-droppings, has always proved a safe and vigor-giving help to many bulbs under cultivation. I have in my mind just now several large specimens of Eucharis, which have been under my eye ten years, and these have always been watered with liquid cow-manure when the flower-scapes begun to develop, which occurs usually about three times a year. These plants are perfectly healthy, and they bloom well. Of course there are many other cases, equally convincing of the fitness of good manure for bulb-culture. What would the Dutch growers of bulbs do without manure in their poor, sandy soil?

Mr. Englehart, who is well known as an amateur grower of the Daffodil, also read a paper on the breeding of these plants. He recommended certain crosses with a view to finally obtaining larger flowers of greater substance and earlier to expand than those we now have. He did not think that the scarlet Daffodil would ever be obtained, notwithstanding Mr. Burbidge's belief that by careful breeding it would come. We do not want a scarlet Daffodil no more than we want a blue Rose or a blue Chrysanthemum.

There was a grand display of all kinds of Daffodils to illustrate Mr. Burbidge's paper. There was also a charming exhibition of rare and beautiful Orchids. One of our oldest and most esteemed horticulturists said to me, as we stood in front of the superb collection sent by Baron Schrœder, "Can one wonder at what foolish people call the 'Orchid mania' when looking at plants like these? Orchids are Nature's richest gifts to the garden. They have no equals in form, in color, in fragrance and in variety." I disputed the claim of superiority in fragrance, for no Orchid surpasses, and only very few approach, the Violet and the Rose in sweetness. I am afraid, too, that a collection such as was shown by Baron Schrœder is quite beyond the reach of all save a very few. They were of the choicest and rarest, and they were perfect examples of good culture. The Dendrobiums comprised large specimens full of flower of the following: *D. nobile*, *D. nobile Cooksoni*, *D. nobile nobilius*, *D. nobile album*, *D. micans*, *D. splendidissimum*, *D. Ainsworthii*, *D. Luchianum*, *D. euosmum*, *D. aggregatum* and *D. Brymerianum*. It would be impossible for me to convey any idea in words of the beauty of these plants. And this is true of *Cattleya Lawrenceana*, a richly-colored variety, with twenty-one expanded flowers; *C. speciosissima Schrœderiana*, a large-flowered variety, with pure white sepals and petals, and the broad lip rich crimson, with white veins and a tinge of yellow in the throat. Mr. Sander sent beautiful plants of the white variety of *Trichopilia suavis*, *Oncidium bifolium*, a graceful little Orchid, with arching spikes of bright yellow flowers not unlike those of *O. varicosum*; *Dendrobium marmoratum*, a mauve-tinted form of the old and beautiful *D. transparens*. A fine example of *Maxillaria Sanderiana*, whose large flowers are colored like the white Tigridia (*T. Pavonia alba*), was exhibited by Mr. Tautz, who also sent a plant in flower of a very dark-colored variety of *Miltonia vexillaria*, the flowers being a deep purplish-rose, with a white eye.

From Low & Co., of Clapton, came a spike of *Phalænopsis Schilleriana*, var. *alba*, in which the flowers are large and pure snow-white, save a few yellow dots on the lateral lobes of the labellum. Kew sent a collection of Indian Arisæmas in flower; *Godwinia gigas*, with an enormous, boat-shaped spathe, two feet long; *Epidendrum bicornutum*, with eight spikes of flowers; a collection of species of Primula; *Columnea Kalbreyeri*, with large, sickle-shaped leaves, olive-green above, purple beneath, and numerous large, tubular yellow flowers; *Rudgea macrophylla*, a large-leaved stove-plant with a large, round head of white fleshy flowers.

Forsythia suspensa (*Fortunei*) is the most beautiful hardy shrub in flower here now. It has very few equals among hardy, spring-flowering shrubs, its long, wand-like branches being thickly set with hanging, bright yellow, bell-like flowers. It is an excellent plant for training against a house-side, a specimen in such a position at Kew being now a large sheet of bright yellow which catches the eye a mile away. In the shrubberies it is equally at home. It may also be grown for early forcing for the conservatory. *F. viridissima*, the only other species, is a greatly inferior plant, but, unfortunately, it is sometimes sold by nurserymen as *F. Fortunei*. There are two forms of *F. suspensa*; one in which the flowers have the corolla-lobes twisted and the pistil twice as long as the stamens; the other in which the lobes are shorter, not twisted, and the pistil is hidden beneath the stamens. I read lately, in a book on Japan, that next to the "Mumè" (*Prunus Mumè*), which is the most universal favorite spring-flowering tree in Japan, is this Forsythia, called "Rengyo" by the Japanese, and



The Purple Beech of the Lyman Place.

cultivated by them in every available corner. It was introduced from Japan to Europe, but is really Chinese, as also is the Mumè and many other plants of supposed Japanese origin, but which were obtained originally by the Japanese from China.

The funeral of the late Duchess of Cambridge, which has taken place at Kew to-day, has been exceptional for the magnificence and variety of the floral wreaths and crosses sent. There must have been close upon two hundred of these, some of them of gigantic size, and mostly composed of the choicest white flowers. Of those which appeared to attract greatest attention were the following: A wreath five feet in diameter, and eighteen inches across the coil, was made up of rich masses of *Odontoglossum crispum*, Stephanotis, Gardenia, Eucharis, etc. This wreath alone contained ten guineas' worth of flowers. A heart three feet across, and made up of Calla Lilies, Eucharis, Lilac and Gardenia, with a miniature cross of Mignonette fixed in the centre and upon this a tiny wreath of Forget-me-nots. A small cross of Violets with single flowers of Stephanotis dotted all over it. A circle of *Beaumontia grandiflora*, the flowers of which remained fresh when most other flowers were more or less drooping. An anchor, with cross composed entirely of rich yellow Tea-roses on a ground of Violets and Ivy leaves. A broad circle of pure white Lilac, with a knot composed of Gardenia. A large harp made up of rich white flowers, the strings formed of single lines of Violets. There were also many of the German style of wreath, in which the leaves of Cycas and similar plants form the principal feature. I never saw so wonderful a collection of beautiful flowers as were arranged in the chapel where the remains of the Duchess rested. Taking a rough estimate of their commercial value, I should say there were about $3,500 worth of flowers there. It has been stated lately in so-called fashionable papers that flowers at funerals were not the fashion. There were evidences at this funeral that flowers are more used than ever. *W. Watson.*

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middle of the last century upon a tree in a German forest), either directly from grafts, and now sometimes by seeds; for the plants raised from the seed of a purple-leaved tree preserve more or less constantly this character to a greater or less degree. The seed from certain trees yield more purple-leaved seedlings than those from other trees, although the proportion of the purple-leaved seedlings from the same tree vary in different years, and among purple-leaved seedlings there is always a great variety of shades of color. In other words, a race of purple-leaved Beeches is gradually becoming "fixed;" and if it was not in practice more convenient and satisfactory to propagate the best varieties of this tree by grafting it would doubtless be perfectly possible, at the end of a few generations, to raise from seed Beeches with leaves of almost any shade of purple with as much certainty as different races of the Cabbage are obtained from seed. There is no reason to doubt, therefore, that the variety will be as permanent as the type from which it originated.

It would be interesting to know if there are large or very fine specimens of the Purple Beech in the neighborhood of this city or of Philadelphia.

Cultural Department.

Brussels Sprouts and Savoys.

MANY people object to Cabbage and even to Savoys—Cauliflower they have found uncertain in our climate, and hard to grow without the aid of glass. For a delicate form of Cabbage, Brussels Sprouts are to be commended. They require a rich soil, and if success is expected they must be abundantly fed. The seed should be started early, and the plants should receive the same treatment as Cabbages, but the Sprouts last all summer, and should be placed where they can have the whole ground for the season. The plants grow with a large, loose, Cabbage-like top and a tall stalk below, over which little Cabbage-like heads form, which can be gathered all summer and until the hard frost of the north may destroy them. In Virginia they usually endure the winter, and furnish an abundance of greens when planted late in summer. Boiled in clean water and dressed with cream, the little heads make a good substitute for Cauliflower. The plants grow tall and top-heavy, and in small gardens it will pay well to stake and tie them up.

Most people who consider Cabbage an essentially coarse food are unacquainted with the Savoy class. Even the Savoys which have been crossed and increased in size and coarseness, like the Drumhead Savoy, are still far superior to the ordinary Flat Dutch and Drumheads. And now we have a variety known as the Netted Savoy, which combines fair size with the highest quality. We never miss Cauliflowers while we have good Netted Savoys. The difficulty in growing all late summer Cabbages is the ravenous green caterpillars which eat them so greedily. Pyrethrum powder will destroy the worms if constantly and thoroughly used, but the maurauders come so rapidly that if the application is not made almost daily it is useless, and with good pyrethrum at seventy-five cents per pound, it will not take long to spend the value of the Cabbages. I generally succeed in raising good crops of Cabbage without pyrethrum by stimulating the growth of the plants during summer with occasional top-dressings of nitrate of soda and frequent, shallow cultivation.

Crozet, Va. *W. F. Massey.*

How We Rid Our Vines of the Mealy-Bug.

WITH the exception of Phylloxera this is the worst pest the Grape-grower has to contend with. When I took charge of these gardens I found that two vineries were badly infested, and the vines were also in very bad condition, and most of the bunches of grapes were full of the bug. I had been told it was impossible to clear vines of the bug, but I determined to try what could be done with those in one house. A few of the bunches were not affected, and by tying pieces of wadding around the stalks of these the fruit was kept clear until it was ripe. When the fruit had been consumed the laterals were shortened back, and the spurs, which were only nine inches apart on either side of the rods, were thinned out to about eighteen inches apart. The vines were then heavily syringed with warm water in which one ounce of soft-soap and one tablespoonful of paraffin per gallon were mixed, taking care to keep it well stirred. This operation was repeated several times until the leaves had fallen, and it reduced the numbers of the insects considerably. As soon as possible after the fall of the leaf the vines were pruned, the loose bark pulled off, and the crevices and spurs scraped with a knife; the glass, woodwork and iron trellis thoroughly washed with hot water and soft-soap, and the wood and iron painted all over with paraffin. Finally the houses were filled with fumes of sulphur, and the walls were scraped and then dressed with hot lime-wash in which some sulphur and carbolic acid had been mixed. The top soil was taken off the border to the depth of three inches, the vines were scrubbed with hot water and soft-soap at the rate of nine ounces to the gallon, and were painted over with a mixture of gas-tar and stiff blue clay, the latter being dried and rubbed into a powder before being well mixed with the tar, the whole forming a stiff paste, with which the vines were coated all over, care being taken not to injure the buds. Some fresh loam was put on the border, and we thought that the last of the mealy-bugs was killed. Meanwhile steps were taken to assist the roots by renewing the outside border, which had got into a very bad state. The vines having started gently on January 5th, all went well, and no traces of bug were found, but as the sap began to rise the coating of clay and tar expanded, and on examining the vines, just as the buds were breaking, three or four young bugs were discovered—a proof that not as yet were all killed. As a last resource a gallon of boiling water was procured, and into which was put five wine-glasses full of paraffin, five of carbolic acid, and half a pound of soft-soap; this was carefully applied all over the rods, with the exception of the growing buds, and decided the fruit in our favor, as we have not had a bug on the vines since that time. This last application may appear to be too strong to be safely applied generally, and I have no doubt it would have injured the vines had they not have been partially protected by the previous application of clay and tar, which formed a hard coating all over them.—*W. H. Divers, in Gardeners' Chronicle.*

Orchid Notes.

Among the many select Cypripediums now in bloom at the United States Nurseries, *C. Wallisii superbum* deserves mention for its rarity and beauty. It belongs to the section Selenipedia, and is a variety of *C. caudatum Wallisii.* It is supposed to have been imported from Ecuador by the collector whose name it bears, and so far as known there are but three plants in existence. The flowers are somewhat larger than those of *C. caudatum*, of a soft lemon color, veined and marbled with delicate green. The dorsal sepal is hood-shaped, seven inches long by three inches wide at the base, and the lower sepal is similar, although slightly darker. The lip, which is of unusual size, is veined with a deeper color than the sepals—pure white within and mottled on the edge with crimson. The petals are more than twenty inches long, of a crimson tint, except at the base, where they are of a pale yellow. Two or three flowers are borne on a scape eighteen inches long and well above the long, deep green leaves.

C. Schræderæ is another rare Orchid belonging to the same section of this genus, a hybrid between *C. caudatum* and *C. Sedeni*, and raised by the Messrs. Veitch & Sons. It inherits the "tails" of *C. caudatum*, while in color it approaches *C. Sedeni*, although superior to the latter plant in this respect. The dorsal sepal is whitish, suffused with rosy pink and slightly veined with green, while the lower sepals are of a pale rose color. The twisted petals are pink, with veins of deeper shade, while the lip is a pale carmine; the lobes white, spotted with purple.

C. bellatulum is another recent introduction, which has been already described in GARDEN AND FOREST. It belongs to the Eucypripedia; the flowers are three inches in diameter with brownish-purple spots showing to advantage on a ground of pale lemon-yellow. The scape is very short, scarcely holding the single flowers above the remarkably large and slightly mottled leaves.

C. Druryi superbum, C. Rœbellini, C. hirsutissimum, C. Dayanum, choice varieties of *C. barbatum, C. Sedeni candidum,* a pure white variety of *C. niveum* and many other choice specimens of the genus are now in flower.

Short Hills, N. J. *H. A. Bunyard.*

Orchid-growers in America will be interested in the fact that Mr. F. Sander has succeeded in getting from Madagascar "a splendid consignment of living plants of *Phajus tuberculosus* and *P. Humblotii*," two of the most beautiful of all Orchids. In England these two species are extremely rare, almost all the plants previously obtained and distributed by Mr. Sander and others having died. They are not easily kept in health, but when successfully managed and flowered they are really gorgeous Orchids. The genus Catasetum is getting a great

deal more attention from Orchid-growers here than formerly. This is due partly to the attractiveness of several of the most recently introduced species, and also to the extraordinary interest which attaches to the flower-structure of the whole genus. Mr. R. A. Rolfe, of Kew, recently read a paper before the Linnæan Society on the sexual forms of Catasetum, supplementing the researches of Schomburgk and Darwin on the same subject. Mr. Rolfe has succeeded in matching males and females of no less than fourteen species. Lindley appears to have suspected that not only would the so-called genera Myanthus and Monacanthus prove to be sexual forms of Catasetum, but that Cycnoches also would ultimately prove to be another "sport" of that genus. A drawing of a Catasetum which flowered at Kew last year, and bore a spike of female flowers (Monacanthus) on one side, and a spike of male flowers ("true" Catasetum) on the other side of the same pseudobulb, was shown by Mr. Rolfe, and caused a little excitement among the Fellows of the Linnæan Society. He also exhibited a drawing of *C. Bungerothii*, showing one female and two male flowers on the same spike. This particular plant flowered with M. Linden, of Brussels, and is the only known instance of this Catasetum having produced other than male flowers.

Kew. *W. Watson.*

three and a half to four inches across, the sepals and petals being pure white, the crest of the lip yellow and marked with a few crimson stripes. It is a deciduous species, and during its growing period should be placed where light and much moisture is available. After its bulbs are well matured it can be placed in temperature a few degrees cooler, to enable the newly-made bulbs to ripen well before commencing to bloom. A fine specimen of this plant is now flowering with Mr. J. Wallace, at Paterson, New Jersey. *A. Dimmock.*

Summit, N. J.

The Common Primrose *(Primula acaulis)*, which grows wild and abundantly in England and Scotland, has been a favorite with American planters for generations, and I have seen it taking care of itself in old-fashioned gardens for years as far north as Bangor, Maine. I never knew it, however, to establish itself outside of the rich soil and limited competition of the garden where it was given a place by man, until the past season, when I was shown a locality in Massachusetts where it had taken possession of a piece of pasture along the sides of a brook, and among scattered clumps of the Barberry and other shrubs. In this heavy, clayey soil it was perfectly at home, and thousands of vigorous plants were disputing successfully with grasses and weeds for a chance to live. This

The Lyman Place, Waltham, Massachusetts.—See page 218.

Dendrobium nobile, variety.—There is now in bloom in Sander & Co's Orchid Nursery at Summit, New Jersey, an extraordinary variety of this old and well-known species. The plant was imported last year, and is of robust habit, with pseudobulbs measuring nearly two feet in length, and from which a dozen large and very rich-colored blossoms have appeared. Each individual flower measures fully four inches in diameter and is well shaped, both sepals and petals being very broad and of a rich, amethyst-purple, the petals being one inch across. The most distinctive character of this variety is that the two lower sepals are furnished with a broad, deep maroon stripe extending their entire length. The lip, also, is very large and highly colored. The plant has bloomed for the first time in this country, and it proves to be a valuable addition to the already existing varieties now in cultivation. Its nearest ally is the variety known as *Dendrobium nobile Cooksonii*, the same rich maroon color appearing in that variety on the basilar half of the petals.

Chysis bractescens.—The lovely, wax-like blossoms of this fine Orchid have now made their appearance. It is an easy-growing species, and thrives well on blocks or in baskets. Its flowers are produced on short stems, four to six together, with the young growth, and they remain about four weeks in good condition on the plant. Each flower measures from

spot, in spring, when these beautiful blossoms are like a brilliant carpet of crimson and yellow, covering many square rods with their bloom, and peeping out of the half-shaded nooks among the wild undergrowth, is a sight to be long remembered by anyone who knows and loves this old Primrose. This is the only case, as far as I know, in which the English Primrose has become really established and capable of propagating itself permanently, so far north, and it is hoped that this hardy strain of these wholly delightful blossoms may hereafter provide us with a race of these Primroses which will be really hardy throughout a considerable part of the Northern States.

Cambridge, Mass. *F. L. Temple.*

Tuberoses.—Two years ago last fall we had an experience which, I believe, may prove as valuable to others as it did to us. Early in summer a fine lot of Tuberose bulbs were planted in an open frame in a warm, sunny situation. They grew splendidly, but, unfortunately, did not flower as early as expected. The cold, frosty nights of fall came on them just as they were beginning to expand a flower here and there. To allow them to perish by frost seemed a sin and a serious loss; and yet we could not house them for want of room. On each side of the frame, therefore, hot-bed sashes were stood on edge, and on top of them others were laid, which formed a

roof, thereby enclosing the plants in quite a respectable green-house. During the day, under the influence of the sun, the inside temperature of this improvised house generally ran up to about 80°, sometimes even higher, and although the nights were sometimes pretty cool, a nice temperature was maintained until next morning. Every plant perfected all its flowers—the most of them being as fine as could be desired. Those who have bulbs on hand need not be deterred from planting them out-doors because the season is getting late.

Milwaukee, Wis. *James Currie.*

The Perpetual Carnation seems to have been overlooked as a bedding or border plant for the garden. Strong plants from cold-frames in five-inch or six-inch pots are preferable. They should be planted as early as the first of May in a sunny position, and in deep, rich soil. They should be firmly set in the ground, and a neat stake should be placed in each plant, to which the flower-stems should be loosely tied as they grow. In making a selection those varieties with long flower-stalks should be chosen, especially for cutting during the very hot weather. The following will be found among the most desirable: E. G. Hill and Portia, scarlet; Century, May Queen and Charles Henderson, carmine or rose; Hinzes' White and Silver Spray, white; Buttercup and Columbia, buff and yellow; Crimson King, Black Knight and Orient, crimson; Chester Pride, Petunia and Star of the West, variegated.

Pearl River, N. Y. *John Thorpe.*

Notes from a Northern Spring-Garden.

NO plant, among those which have opened their blossoms during the present week, is more showy in flower than the very old-fashioned *Adonis vernalis*, which was seen more frequently in gardens a century ago than in those of the present day. This species of Adonis rises only a few inches above the surface of the ground; the leaves are produced mainly near the summit of the stems, and are finely cut into narrow, slender divisions. Each stem is now surmounted with a Ranunculus-like flower, two or three inches across, with ten to twenty narrow petals of a clear, yellow color. These flowers, when a great mass of the plants are grown together, make a display of color which in bright sunshine is almost indescribably brilliant. They close during the night and in dull weather. This Adonis grows best in deep, rich and rather moist soil. It is slow in establishing itself, and several years are required to obtain all the beauty it is capable of giving at this season of the year. It should never be disturbed when once fairly established, and should be allowed to spread and to obtain as strong a hold on the ground as possible.

The European Dog-tooth Violet (*Erythronium Dens-canis*), which is now in bloom, flowers here several days earlier than our common native species. The flowers are large, having been greatly improved by selection and by long cultivation, and they show considerable variety of color from almost red through rose and pink to white. It is an attractive and perfectly hardy plant, thriving in the shade of trees and in more exposed situations, and it is a capital subject to naturalize by a wild wood-walk or along the margins of shrubbery. The Dog-tooth Violet is grown in immense quantities by the Dutch bulb-farmers, and the bulbs, which should be planted in the autumn, can be imported very cheaply. In speaking of very old-fashioned flowers the Grape Hyacinth (*Muscari botryoides*) should not be forgotten. This, like most of the old familiar bulbous plants of gardens, is a native of Europe, and has been in cultivation for centuries. The short, compact racemes of dark blue, globular flowers, resembling, fancifully, miniature grapes (whence the popular name), are familiar sights at this season of the year in old country gardens, whence this plant has occasionally escaped into neighboring woods and fields, so that it may in time become fairly naturalized. There is a variety with pure white flowers, and others with flowers of pale blue and of flesh color, but none of these are equal to the old and more familiar type. This, like the Dog-tooth Violet, is an excellent plant to naturalize in our New England woods and fields.

Corydalis solida, or, as it is more generally known, *Corydalis bulbosa*, seems destined to become a troublesome weed in the rock-garden, springing up everywhere and spreading rapidly. It is now covered with its short racemes of rather dull purple flowers. It is the earliest of the genus to flower here, and certainly requires no care, except to keep it within reasonable bounds. More attractive is its American relative, *Dicentra Cucullaria*, with its finely-divided, pale green leaves and slender racemes of graceful, white flowers tipped with canary-yellow. It is well established here at last (for it is rather impatient of cultivation, and adapts itself slowly to changed conditions), and is now beautifully in bloom. And so is the Pasque Flower (*Anemone Pulsatilla*), with its great, solitary flower, the mass of golden stamens making a fine contrast with the violet-purple sepals. The finely-divided, silky, glaucous foliage is attractive as well as the very showy flowers, and so are the large heads of fruit, which resemble those of a Clematis. It well deserves a place in every garden. *Primula rosea* (see page 141 of vol. i.) improves on longer acquaintance, and I can only say of it again what I said a year ago, that "it would not be easy to find among early flowering hardy plants a more striking and beautiful object than a mass of this Primrose." The Twin-leaf (*Jeffersonia diphylla*), so named from its curiously-divided leaves, is in flower fully two weeks earlier than usual. It is always attractive, even after its large, pure white, but very fugacious, petals have fallen. It is a native of western woods, is very easily cultivated, and may be increased by division or from seed, which is freely produced and germinates quickly. I wish that this and scores of other little-known North American wild flowers could be more often seen in American gardens. It is because they are American, I believe, that we see so little of them in this country, except in their native haunts.

Very showy now are the flowers of the European *Orobus vernus*. It is, as I wrote a year ago, "one of the hardiest and in every way most satisfactory of the early flowering, herbaceous plants." It forms a compact, bushy mass of foliage less than a foot high, now completely covered with nodding, pea-shaped flowers, purple and blue when they first open, but later turning deep blue. This little Veitch will thrive in any good garden soil, and will reappear year after year, but without spreading and without care beyond an occasional division of the roots, to insure vigorous growth—a practice which greatly benefits all herbaceous plants, especially those of vigorous growth and strong digestion.

I invite the attention of all persons interested in spring-gardening to *Magnolia stellata*, or, as it is sometimes known in American collections, *Magnolia Halleana*, so named by Parsons, who first cultivated it in this country, it having been one of Dr. Hall's early introductions from Japan. This Magnolia is suitable for the smallest garden or the tiniest lawn. Here in this country it is a low shrub, not yet more than three or four feet high, although in the forests of Japan it is said to become sometimes a small tree; it is perfectly hardy, and it is the earliest of all the Magnolias to flower, its pure white, deliciously-fragrant flowers appearing here fully a week earlier than those of *Magnolia conspicua*, formerly the earliest of the Magnolias. The flowers of *M. stellata* are pure white, three inches in diameter, with petals which are at first spreading, giving to the flowers a star-like appearance; but later becoming quite reflexed. It is a good plant for the door-yards of city houses, for the rock-garden, or for any situation where spring-flowers are esteemed.

The Allegheny *Andromeda floribunda* and its near relative from Japan, *A. Japonica*, are now flowering here side by side, and the plants afford a good opportunity for comparison from the garden point of view. The panicles on the American species are smaller, more rigid, and are upright; the flowers are whiter and more leathery, and are more than half the size of those of the Japanese species; the leaves are smaller, more rigid, and much darker green; the habit is more compact and less pleasing. On the whole, the Japanese plant, with its broad, drooping panicles of large flowers; its freer and more rapid growth and more graceful habit, is the more attractive garden ornament of the two species. Here at the north, however, it will never be as valuable as its American relative, as the flowers appear so early that it is only in an exceptional season like the present that they are seen to advantage. Did it appear every year as it does just now, *Andromeda Japonica* would be one of the best evergreen shrubs known. It is just now by far the most attractive shrub in this garden. Perhaps some of the readers of GARDEN AND FOREST who have had an opportunity to watch this plant in a beter climate for it than that of New England, will make public the results of their observations.

It is interesting to read in an English journal that the "Glory of the Snow," as *Chionodoxa Luciliæ* (mentioned in my last letter) is now called in England, is spreading in gardens in that country from self-sown seed, and that it can be naturalized in the grass. When this plant is more common and better known it will, I believe, be one of the most popular, as it is one of the most beautiful, of spring-flowering plants.

The difficulties of gardening in this climate and the variations of the New England climate in April may be well illustrated by the fact that on Saturday of last week the thermometer marked 84° in the shade. Easter Sunday was nearly as

hot, and buds of *Magnolia conspicua*, which were completely closed on the morning of that day, had, by the middle of the afternoon, burst into full bloom. Tuesday night ice was formed in tubs and pails more than half an inch thick. But, strange to say, the flowers of none of the herbaceous or bulbous plants have suffered. The flowers of the Forsythias, almost fully expanded, of the Magnolias and of the Sweet Almond are uninjured, while those of Rhododendron Early Gem, growing in a low, damp situation, which were fully out on Monday, were frozen stiff, and are, of course, entirely ruined.

Boston, April 24th. C.

Principles of Physiological Botany, as Applied to Horticulture and Forestry.

XIX.—DISTURBANCE OF FUNCTION. CERTAIN PLANT-DISEASES. INJURIES AND THEIR REPAIR.

AS stated in a previous paper, the diseases of plants belong to the province of vegetable pathology instead of vegetable physiology, and they are referred to in this series merely because we can sometimes learn something of the functions of a healthy organ by watching its behavior when it is affected by some disturbing cause. Even if we do not know what the disturbing cause may happen to be (much less remove it), we may still gain further insight into the action of an organ or an organism which has come under its influence.

Before considering this subject, attention should first be directed to what are called monstrosities. Everyone is familiar with the commonest forms of monstrosities, such as four and five-leaved Clover, consolidated shoots of Asparagus, green Roses, and the like. These variations of number, of union of parts, of accidental division, and changes in color, throw much light on the laws which govern structure, but they do not usually aid us in the examination of the office of organs which are abnormally developed. There are, however, some strange modifications of structure which follow the attacks of insects, for instance, in the case of the so-called gall-insects. The slight injury inflicted and the subsequent irritation caused by these insects give rise to variously-shaped excrescences, which are characterized in numerous instances by an increase in the amount of astringent matters, tannin, gallic acid, and the like, collected in the neighboring cells. In fact, as everyone knows, the amount of such astringent matter in the galls on a species of Oak is so great that they become a matter of commercial importance. The symmetrical outgrowths on the stems of some Willows are doubtless familiar to all.

For an interesting account of the relations which exist between certain insects and enlarged organs of some species of tropical plants, the reader is referred to the work mentioned in the foot-note.* From Mr. Belt's statements it appears that some of the Acacias of Nicaragua have enlarged appendages (stipules) at the bases of their leaves, which secrete large amounts of saccharine matter for the nourishment of ants. The insects are completely satisfied with this store of food which is provided by the plant, and they do not attack the leaves. These ants serve as a well-fed garrison to defend the plant from the attacks of leaf-cutting ants. Other cases quite as remarkable as this have been noted in the tropics. In all of them some organ is excited to the exercise of a function not commonly associated with it. But such cases are to be regarded as modifications which have probably arisen by slow adaptations through a series of generations, and hence are not to be properly regarded as disturbances of function.

Certain fungi, notably the so-called rusts, smuts and mildews, are exceedingly destructive to the cells and contents of cells of many plants. Besides being destructive to the contents of cells, certain fungi may give rise to extraordinary distortions of form of the host-plant. Among such may be mentioned the familiar cases of that which causes the outgrowths on our common Cedar, and that which produces the diseased state of the grain of Rye (known as "ergot"). But with these invasions of fungi we are now to deal only in the most general manner.

For the purpose of our present examination, these fungi of all grades may be regarded as parasitic, subsisting on living tissues and their living contents. Many of them act also on the same matters in dead plants, and some act only on non-living matter, but the latter may now be left out of account. A parasitic fungus is unable to utilize inorganic matter. It must have organic matter in some form, and this it obtains from the contents of the living cells of its victim. Throughout the organism the threads of the fungus make their way, frequently sending out invading filaments which grow but a short distance from the path of the main threads. All of these are engaged in consuming and appropriating the organic matters accumulated by the host-plant. In some cases, the blight sweeps through a plant with great rapidity, while in others the invasion is insidious, and the progress through the attacked plant is, on the whole, rather gradual. In some manner, either by separated cells formed after the manner of buds, or by what are known as spores of sexual origin, these invading plants are disseminated in some instances with frightful rapidity. These spores are frequently very much more resistant to destructive agents than are the invading threads, and hence the problem of destroying the fungus, as one might say, of an herb, "root, and stem, and leaf, and seed," is very difficult and disheartening. But the arduous labors of the cryptogamic botanists have suggested some efficient remedies for a very few cases, and others will doubtless follow. To see what remedies against fungi can be expected to accomplish, a few words must be devoted to the conditions requisite to the growth of some of these fungi. They require precisely the conditions necessary to the rapid growth of vegetable cells in general, namely, moisture, food, plenty of oxygen, and a certain temperature.

When a fungus has fairly invaded the tissues of a plant, there is very little hope of resisting its further advance. In a few instances, experiments have shown that much may be done towards warding off invasion and preventing the fungus from getting a foot-hold. Thus, the fungus which is known as the "Downy Mildew" of the grape-vine, has been successfully combatted in certain localities by the use of solutions of salts of copper sprinkled at intervals on the leaves. But it should be acknowledged that in some other instances the solutions have failed. In a few cases, also, the same remedies have been more or less efficacious when applied to the forming fruit of the Grape threatened by the fungus which produces the so-called "black rot." But it has been well said that the results in these instances are conflicting, and cannot be regarded as conclusive.†

In experiments in France, the solutions known as *Bordeaux mixture* (consisting of six kilograms of sulphate of copper in 100 litres of water and eight kilograms of lime in thirty litres of water) and *Eau celeste* (consisting of one kilogram of sulphate of copper and two litres of ammonia in 200 litres of water) have given excellent results in diminishing the ravages of mildew.

In some cases, such as that of the fungus causing the so-called "black-knot" of Plums, the only treatment suggested with confidence is the complete destruction of affected trees, thus lessening the spread of the malady.

Certain fungi are very destructive when they attack non-living wood, causing rapid decay. These invasions are frequent in the case of some of our cultivated trees, and forest trees which have their wood exposed by injury. In not a few cases the resinous matters which impregnate the wood or which are poured out after a mechanical injury, exert a true antiseptic and preservative power. As a general thing, Nature heals all wounds where this is possible by the formation of the tissue known as cork. Even when the leaves fall in autumn, it can be seen that by an anticipatory development of cork at the twig, the wound which would otherwise be an open one is already, at the fall of the leaf, a healed scar.

Cambridge, Mass. *George Lincoln Goodale.*

* Belt's Naturalist in Nicaragua.

† Professor F. L. Scribner's Communication in Bulletin of the Commissioner of Agriculture, 1888.

Periodical Literature.

Mr. Frederick Boyle is an English author and amateur cultivator of Orchids, whose enthusiasm for the latter branch of his activity expressed itself last winter in two charming articles in *Longman's Magazine*, which were duly noted in these pages. Now he writes again on the same subject in the March number of the same periodical, the title of his chapter being "Cool Orchids." Nothing could be more desultory than his treatment, or more lively than his style. He passes at a bound from Orchids in their suburban glass-frames to Orchids in their native habitats, and lays a tribute of glowing words now on the far-off tomb of some fever-stricken collector and now on the head of some favorite Odontoglossum or Cypripedium. But all his paragraphs are entertaining, and some of them are instructive. His main object is to impress upon the impecunious amateur that Orchids of many sorts are easily within his reach. "I should like," he says, "to publish it in capitals—that nine in ten of those suburban householders who read this paper may grow the loveliest of Orchids if they can find courage to try;" and then he explains how little courage is really needed. "The plain truth is that no class of plants can be cultivated so easily, as none is so

certain to repay the trouble, as the Cool Orchids. . . . We have at least a hundred genera which will flourish anywhere, if the frost be excluded; and as for species, a list of two thousand would not exhaust them, probably. . . . But a reasonable man may content himself with the great classes of Odontoglossum, Oncidium, Cypripedium and Lycaste; among the varieties of these, which no one has ventured to calculate, perhaps, he may spend a happy existence." Odontoglossums stand first, Mr. Boyle declares, having the great merit of bursting into flower at any season as they may chance to ripen. "It is their instinct to flower in spring, but they are not pedantic about it in the least. Some tiny detail overlooked here and there, absolutely unimportant to health, will retard inflorescence. It might very well happen that the owner of a dozen pots had one blooming every month successively. And that would mean two spikes open, for, with care, most Odontoglossums last above four weeks." Lycaste is likewise strongly recommended. Mr. Boyle speaks of that genus as he protests "without prejudice," and, as we think, very sensibly, saying that the flower of the most common species, *L. Skinneri* "is stiff, heavy and poor in color. But there are tremendous exceptions. In the first place, *L. Skinneri alba*, the pure white variety, beggars all description. Its great flower seems to be sculptured in the snowiest of transparent marble. That stolid pretentious air which offends one—offends me, at least—in the colored examples, becomes virginal dignity in this case." How vast is the difference in the estimation which collectors put upon varieties of this plant is shown by the fact that "plants of the same size range from three shillings and six pence to thirty-five guineas."

With regard to Cypripediums Mr. Boyle states a fact that will probably be new to American readers. *C. spectabile*, he says, grows "like any water-weed in the bogs of New Jersey where it is frozen hard, roots and all, for several months of the year." But transplanted to England, "very few survive the season . . . even if protected." The fine specimens seen at English flower shows in the spring "are imported in a dry state." It is the damp of the English winter that they cannot bear, and the same thing is true of Canadian and Siberian species. "I saw in Russia, and brought home a magnificent species, tall and stately, bearing a great golden flower which is not known in 'the trade;' but they all rotted gradually. Therefore I do not recommend these temperate varieties which the inexperienced are apt to think so easy. At the same cost others may be brought which, coming from the highlands of hot countries, are used to a moderate damp in winter." At the end of his article Mr. Boyle sums up the requisites for the cultivation of good Cool Orchids: "These plants ask nothing in return for the measureless enjoyment they give but light, shade from the summer sun, protection from the winter frost, moisture—and brains."

Turning now to those parts of his article which speak of the difficulties attendant upon the importation of South American Orchids, we find them bristling with striking anecdotes, familiar doubtless to the practiced amateur, but causing the novice to wonder, with Mr. Boyle himself, how Orchids can possibly be as cheap as they are. Accounts of the difficult and dangerous journeys of the collectors who are sent out by the great English Orchid firms read like paragraphs from Jules Verne's novels rather than sober statements of enterprises undertaken for commercial reasons; and the list of the men who have perished by accident or disease is long and pitiful reading. Even after the Orchids have been found, secured and brought down to the coast they must be transported by water to a port where a European steamer can be had, and the attendant dangers are then as great to the plants as to their guardian. And when the port is finally reached it may very well be that the collector "has to wait days in that sweltering atmosphere for the Royal Mail steamer; and when it comes in his troubles do not cease, for the stowage of the precious cargo is vastly important. On deck it will almost certainly be injured by salt water. In the hold it will ferment. Amidships it is apt to be baked by the engine-fire. Whilst writing I learn that Mr. Sander has lost 267 cases by this latter mishap, as is supposed. So utterly hopeless is their condition that he will not go to the expense of overhauling them." And in this case the charge for freight alone from South America had been £750. Mr. Roezl, a famous and experienced collector, we are also told, once took special pains with a "unique shipment" of *Masdevallia Schlimii*. "It contained 27,000 plants of this species, representing at that time a fortune. Among the 27,000 two little bits survived when the cases were opened." As for the difficulties attendant upon actual collecting Mr. Boyle says that the Roraima Mountain is getting to be regarded as "quite easy travel for the Orchid-hunter nowadays. If I mention that the canoe-work on this route demands thirty-two portages, thirty-two loadings and unloadings of the cargo, the reader can judge what a 'difficult' road must be." And to secure *Odontoglossum Hallii* alone the "ardent explorer must march in the bed of a torrent and on the face of a precipice alternately for an uncertain period of time, with a river to cross about every day; and he has to bring back his loaded mules or Indians over the same pathless waste."

Correspondence.

How a City Gained a Park.

To the Editor of Garden and Forest:

Sir.—The city of Bridgeport is spreading rapidly into the country, and fortunately the suburbs are in many cases provided with shaded streets and open gardens. But the distinctive name of "The Park City" has been given to it, not for its rural surroundings, but on account of the two parks of strikingly different characters which it now possesses.

The one, Seaside Park, secured by the wisdom and generosity of various citizens, lying along the Sound shore, where it curves with a particularly beautiful line, has long been enjoyed as a fashionable resort by the rich, and as a blessed breathing place by the poor; and it has before it a future hardly realized by those who do not know that it is but the starting-point of a system of seaside boulevards which will extend uninterruptedly from Bridgeport to South Norwalk, if the present design is carried out.

The other, Beardsley Park, lying several miles distant on the east side of the town, is the gift of one public-spirited man on the condition that the city improve it for the people, making yearly appropriations to that end.

The appropriations are comparatively small, and progress, therefore, necessarily slow, but already about fifty acres are improved to a degree that invites the attention of the public to this new possession. The gift comprises many acres more of charmingly undulating land, and as the work continues all these will be included.

There is a pretty story about the inspiration of this gift, which should be more widely known. It seems that the good man who gave this park to Bridgeport had been for some time impressed by the need of such a health-giving resort in that portion of the town, and for that class of people who could not drive to the delightful but remote "Seaside."

He had been vaguely intending to give such a park to the city as a sort of monument or memorial—at all events, to give it. But one hot summer day, a holiday, going into town from his farm, he saw a poor woman and some little children enter a field and establish themselves under a tree, apparently for a picnic. Knowing the owner of the field, and seeing him at that moment approach, the good man determined to remain and see the result of the owner's visit. As he anticipated, the little picnic party was ejected, though doing no harm at the time, and as they went sadly away the vaguely benevolent intentions of the spectator were instantly crystalized into a purpose which was acted upon at once. The result of that day's disappointment to the mother and her children was that the beautiful Beardsley Park is open freely and perpetually to them, and to all who, like them, long for the peace and pastoral beauty which "restore the soul" and give to the poor as well as to the rich the sense of sharing in the general beneficence of the bountiful seasons as they pass. All that can be done to make Beardsley Park comfortable and delightful for just this class is being done slowly and well, while here, also, the fine, solid roads will for ages invite those who ride or drive to enjoy this exquisite rural park which so happily places a wide barrier just here between the onward march of the city and one of the loveliest of inland views. *Elizabeth Bullard.*

Bridgeport, Conn.

To the Editor of Garden and Forest:

Sir.—In Vol. I., page 107, of Garden and Forest, I gave the dates of the first appearance of *Hepatica triloba* in the same locality in the woods of Newton, Massachusetts, during the last twenty-six years; the first blossoms being, as it would seem, a fair criterion of the atmospheric conditions attending the early months of these different years. This year the first flowers were picked, on the same spot, on the 17th of March, and were fairly in blossom and were not forced into bloom by removal to a warm room. I again transcribe from my memorandum the dates for the last ten years:

March	2d, 1880.	April	15th, 1885.
April	3d, 1881.	March	18th, 1886.
March	5th, 1882.	March	21st, 1887.
April	1st, 1883.	March	23d, 1888.
April	13th, 1884.	March	17th, 1889.

The spring of 1880 was the earliest and warmest for the twenty-seven years.

Chestnut Hill, Mass. *D. D. Slade.*

An Orchid Nursery.

To the Editor of Garden and Forest:

Sir.—A few weeks ago your London correspondent wrote that the position held by the Orchid family would be the most remarkable feature in the history of English horticulture in the nineteenth century. It cannot be said that in this country "the cultivation of Orchids has developed into almost a passion," or that millions of pounds are invested in them here. It is true, however, that there are a few collections in the United States which take rank among the foremost in the world for size and completeness, and several more which, although not so large, would be noteworthy in any country for careful selection and skillful cultivation. That there is a growing interest in these plants is proved by the fact that the number of buyers has doubled in the past three years. This does not mean that the sales have been doubled in amount, for the new purchasers take plants in moderate quantities. But, after all, it means that more new collections are started every year, and there is good reason to believe that the demand for these plants is steadily increasing.

That this is the faith of enterprising dealers is proved by the fact that F. Sander & Co., whose great nurseries at St. Albans, England, are devoted to Orchids alone, have established a branch nursery at Summit, New Jersey, to meet the present and prospective requirements of their business in this country. Agents of this firm have been sent here for several years in the season of auction sales, and three years ago Mr. I. Forstermann came here as a resident representative of the house, and it is under his direction that the branch nurseries are now being built. These nurseries, as I learned on a visit to Summit last week, are finely located, and are planned to consist ultimately of eight growing-houses, each 150 feet long by twenty-one wide, with lean-tos attached, and all connected with a central show-house. One of these houses is already built in the most substantial manner, with heavy concrete walls and the best selected yellow pine throughout. The house stands on sloping ground, and the earth has been excavated from the alleys only and left three feet deep under the side and central stages. This earth under the staging is covered with forest-leaves, and it is expected that the evaporation of moisture from the damp earth and leaves will furnish an atmosphere which will approach in quality the air in the natural habitat of the plants. The water-pipes, are not placed below the staging, but under the walks which are made of yellow pine strips. One small pipe runs along the back of each side-table and above it, and behind this is a line of ventilators set so closely as to be almost continuous for the purpose of cooling the house in summer. There are many features in the construction and arrangement of this house which I have not observed before, and which seem to add much to its beauty, convenience and practical effectiveness, but the space you grant will not admit of further detail in this matter.

The principal purpose of this establishment will be to furnish a place for the reception of plants as they are imported, where they may be grown on until they become established and in flowering condition. When a buyer has a skillful gardener he will not hesitate to take Orchids from the case and to care for them from the time of their arrival. But a long sea-voyage is a strain upon the vitality of the plants, and some species always suffer seriously. Comparatively few gardeners in the United States have sufficient experience to warrant success in taking charge of Orchids when in an enfeebled condition; and when plants are lost dissatisfaction must follow. If, however, the plants are taken directly from the ship and placed under the expert treatment which they will receive at these nurseries, a large proportion of them can be safely carried over this period of danger, while under less favorable conditions they might perish. Beginners should never attempt to grow freshly-imported Orchids, and it will be found in every way more satisfactory for them to see the plants they buy in flower, or at least giving promise of flower. Another purpose of these nurseries will be to furnish something like a training-school where young men who wish to learn the niceties of Orchid culture can receive practical instruction, and the young gardeners who come here to assist will be prepared to supply the skilled labor which is now difficult to obtain in this country. Of course rare plants will be propagated here, and in time efforts will be made to produce new varieties by hybridizing.

Nearly all the Orchids in the nurseries at present are recent importations, and are just as they came from the woods. There are a few specimen plants, however, that would be notable in any collection. One of these is a *Cattleya Skinneri* four feet across, with enormous bulbs and the promise of 500 flowers. Near it is one of the largest plants of *Saccolabium guttatum*, filling a basket three feet square, and a specimen of the white *Lælia anceps* nearly as large. Passing by a remarkable specimen of *Cypripedium grande atratum* and a good *Cattleya citrina*, one of the most interesting plants is a large *Cælogyne Forstermanni*, which was discovered in Borneo by Mr. Forstermann. In its home, as many as thirty flowers are sometimes borne on a single erect spike, after the style of *Odontoglossum crispum*. They are of purest white, with a yellow throat. The plant, however, has never yet bloomed in cultivation. It does not bear transportation well, and no specimen has yet been brought up to a strength sufficient for the production of flowers, although the plant here shows promise of bloom.

Inasmuch as Messrs. Sander & Co. have as many as twenty collectors in the East Indies, in Africa, in South America and Mexico the nurseries can be filled with plants as quickly as they are built, and there is little doubt that the market will take them all. There is an erroneous notion that all Orchids are expensive, for many of the very best of them, when estimated for their beauty and ease of culture, are really cheap. Flowering plants of such admirable species as *Cattleya Trianæ*, *C. Mossiæ*, *Dendrobium Wardianum*, *D. nobile*, *Cypripedium insigne*, *Oncidium varicosum*, and many more can be had for a dollar or two each, while there are varieties of the same species which would cost hundreds of dollars. This does not imply that the expensive ones are necessarily the most beautiful, but it illustrates the fact that there are two classes of Orchid-growers. The one class cultivates them for their beauty only, and such a taste can be gratified without any extravagant expenditure. But when one collects Orchids with a similar purpose to that which controls a collector of coins, or of rare books or prints, the diversion becomes a most expensive one. No one will find fault with a collector of the second class who has the means to indulge his fancy in this direction. But I wish there were more of the first class, who grow Orchids as they grow other plants, simply for their beauty and fragrance, and who do not find their highest value in the fact that no one else is able to get plants like them.

Summit, N. J. *S.*

Recent Plant Portraits.

Botanical Magazine:

Lilium nepalense, *t.* 7043; a well-marked species, discovered more than fifty years ago in the high mountains of Nepaul, but only very recently introduced into cultivation. The flowers, which appear either singly or in corymbs of three to five, are "four or five inches long, greenish-yellow outside, yellow within, flushed, except in the upper third, with purplish-black."

Sarcochilus luniferus, *t.* 7044.

Stuartia Pseudo-Camellia, *t.* 7045; a handsome-flowered, hardy shrub, the Japanese representative of a genus quite widely distributed in our south Atlantic States, where ten species occur. The Japanese plant was introduced into the United States many years ago by Mr. Thomas Hogg, and is now not infrequently seen in American gardens.

Opuntia polycantha, *t.* 7046; this, it seems, is Haworth's (Suppl. Pl. Succulent, p. 82) earlier name for *O. Missouriensis*, the dwarf and horribly armed species familiar to all travelers over the northern plains towards the upper Missouri and the Saskatchewan.

Chironia pedunculatis, *t.* 7047.

Eremostachys laciniata, *t.* 7048; a noble perennial Labiate from the Levant and the Caucasus, long known in gardens, having been introduced into England by Philip Miller as early as 1731.

Delphinium Zalil, *t.* 7049; a plant of economic value. This is one of the most interesting discoveries of the Afghan Delimination Commission. The botanist of the Commission, Dr. Artchison, thus refers to it: "This plant forms a great portion of the herbage of the rolling downs of the Badghis; in the vicinity of Gubron it was in great abundance, and when in blossom gave a wondrous golden hue to the pastures. The flowers are collected largely for exportation, chiefly to Persia, for dyeing silk; they are also exported from Herat, through Afghanistan to northern India, to be employed as a dye as well as to be used in medicine." It is a showy plant when its bright yellow flowers, borne in spikes ten inches long, are expanded.

Iris Barnumæ, *t.* 7050; a handsome, purple-flowered species, introduced into cultivation by Professor Foster, who

received it from Mrs. Barnum, of the American Mission at Kharput, in Armenia.

CALIANDRA OPPOSITIFOLIA, *l.* 7051; a native of the mountains of Oregon and northern California—a neat but not very showy-flowered species.

Notes.

The annual congress of the German Pomological Society will be held this year at Stuttgart, between the 22d and the 30th of September.

A horticultural and a botanical congress will both be held in Paris during the month of August, this year, in connection with the International Exhibition. An agricultural congress will be held during the month of July.

After the meeting of the Pennsylvania State Forestry Association, at Westchester, on the 26th of April, a Chester County Forestry Association was organized, with the Honorable Washington Townsend as President, and Professor J. P. Welsh as Secretary.

A new edition of Mr. Robinson's popular "English Flower Garden" has just been issued by Murray, of London. It contains more than 1,400 pictures, illustrating many beautiful English gardens, as well as nearly all the plants that are hardy in the kingdom.

The parasitic insects which have been imported from Australia to prey upon the cottony cushion-scale, the most serious enemy of the Orange in California, are already multiplying rapidly in Los Angeles, and sweep the scale before them, as has been the experience in Australia. Mr. Koebele, the agent of the government, has brought to California a large supply of these predaceous beetles, and will distribute them wherever the scale is troublesome.

The legend of St. Patrick and his expulsion of all vermin from the Emerald Isle probably gave rise to the ancient belief that Irish oak-wood was superior to all other kinds, having a sort of sacred character and being proof against the ravages of insects. The venerable Bede declared that this wood "hath a virtue against poison," and so great was its renown that even at the end of the last century it was imported by the King of Portugal after the great earthquake at Lisbon to share in the construction of his new church. The original rafters of Westminster Hall were of Irish oak.

An English horticultural journal states that a small box of Lilies-of-the-Valley was recently sent from England to Pietermaritzburg, in South Africa, the plants being packed in a tin box, and each root enveloped first in damp moss and then in tin-foil. "The roots were all tightly packed at one end of the box, the other end being left vacant to admit of growth being made. The crowns were just bursting their first foliar envelope, and by the time the parcel reached its destination—a journey of twenty-four days—the buds were just breaking into bloom, and the plants were in a perfectly healthy condition."

In 1887 a spot disease was observed on Cucumbers near Geneva, New York, which almost ruined the crop. Professor Arthur pronounces it a parasitic fungus similar to one which has been disfiguring Peaches in Indiana, detracting from their beauty and hindering their growth. The Cucumber spot did not appear at Geneva in 1888, although it seems an aggressive fungus. It has been named *Cladiosporium cucumerium*. The fungus on Peaches has only been recorded before as occurring in southern Austria, where it was named *C. carpophilum*. No remedies for either disease have yet been tried so far as known, but both of them threaten to become dangerous pests.

The pea-weevil (*Bruchus pisi*) and the bean-weevil (*Bruchus fabæ*) can be destroyed by putting the Peas or Beans into a pail and covering them with water; if the water is warmed to about blood-heat all the better, but this is not necessary as cold water will answer. If the seed remain in the water from eight to twelve hours every weevil will be destroyed, as the cavity containing the insect is soon filled by the water absorbed by the seed and the weevil is drowned. This simple remedy, which is recommended by Professor J. W. Clark, of the Agricultural College of Missouri, is not only effective, but does no injury to the seed, and if the seed is not soaked until the day before planting it will germinate more readily than before.

Speaking of the great popularity of *Cobæa scandens*, the *Revue Horticole* says that it seems somewhat strange that until recently no variety of it had been raised. A novelty is, however, now offered in the shape of a white-flowered variety, which differs from the type not only in the color of the blossoms but in the paler green of the leaves and the purplish hue of the stems, which passes into whitish in the young shoots. "Although these differences may not be considered very important, they are sufficiently so to be appreciated when the two forms are growing close together, as we recently saw them at Paris, planted alternately and entirely covering a wall with their abundant foliage, prettily relieved by the white and violet-colored flowers. The white-flowered Cobæa being as vigorous and hardy as the type, the same details of culture are applicable to both forms."

Few persons imagine how many different substances have been used of late years in the making of paper. Rags, of course, still furnish the bulk of our paper, but large quantities are also made of wood, straw and Esparto-grass (*Stipa tenacissima*); and in various parts of the world successful experiments have been made with a multitude of materials that have not yet been brought into general use. In France paper has been manufactured out of leaves which are cut, pressed into blocks, and then steeped in lime-water to reduce them to pulp. In Ireland the Mallow, the Hop-vine, the Yellow Iris, and even the Red Clover have furnished paper pulp, and in Scotland the stems of the Hollyhock, peat, bracken, flags and rushes of several kinds. Sea-weed and tan have also been used in Europe, and in the East, Ramie Pine-apple fibre, Bamboo stalks and the refuse of Sugar-cane.

Professor W. A. Henry, writing in *Agricultural Science* of some weeds that are becoming troublesome in Wisconsin, says: "On the great plateau along the eastern flank of the Rocky Mountains grows *Solanum rostratum*, a homely, harmless sort of plant. The naturalist knows it to be the original food-plant of the Colorado potato-beetle (*Doryphora 10-lineata*). In the year 1872 or thereabouts the beetle, coming across the uncultivated strip of eastern Colorado and western Kansas, found a new food-plant in the common cultivated potato, and spread with marvelous rapidity over the country. *Solanum rostratum* also comes into the fields to conquer, and has spread on cultivated lands in Texas and Missouri, where, with greatly increased size, it proves a troublesome weed. Last summer Mr. L. H. Pammel, one of our agricultural graduates, now professor of botany in Iowa Agricultural College, found this plant growing at Watertown, in this State. It is following up the potato-beetle. Will it spread over as large an area as its old acquaintance?"

Nothing could have been more effective or in better taste than the floral decorations of the Metropolitan Opera House as arranged for the great Centennial ball and banquet last week. The walls of the lobbies and lower staircases were entirely concealed by plants so that they presented the aspect of verdant bowers, yet a certain architectural dignity was preserved by the systematic employment of tall, upright Junipers intermixed with the lower plants. On the face of the arch leading from the main lobby into the house the dates 1789–1889 were emblazoned in red upon a quiet green ground, but, with this exception, scarcely any cut flowers were used; and the growing ones were beautifully massed in contrasting groups. The corners were filled with pyramidal banks of pink Hydrangeas, and against the piers stood enormous tall clumps of while Lilies with masses of red Geraniums or Azaleas around their base. In other spots great Azalea bushes rose from a foundation of white Spiræas, or yellow Cytisus from banks of yellow-centred bush Daisies; and the beauty of the individual plants was as conspicuous as the tasteful richness of the general effect. In the supper room again there were no set pieces, but Azaleas, Spiræas, and other growing plants adorned the tables at intervals. The arrangement of the chandeliers in this temporary structure was especially pretty. They were formed as round baskets filled with Palms and Pine branches, apparently growing, and with streamers of Ivy, amid which rose gracefully curving stem-like supports bearing the electric lights. Few plants were used in the ball-room as space was precious, but the corners of the stage opposite the Presidential boxes were banked with pink Hydrangeas and other plants of an harmonious character, while long festoons of green hung from the proscenium arch. Of course, the finest display was when the house was arranged for the dinner on Tuesday; then the vast room was encircled with tall, green plants, and the tables were profusely yet most tastefully adorned, flowers of a single hue, or at most of two contrasting hues, being exclusively used on each of the different tables. Mr. Klunder has long been famous for his skill in floral decoration, but his success in this instance will add a conspicuous new leaf to his laurels.